Central Alaska Network
Long Term Ecological Monitoring Program
Denali National Park & Preserve
Summary Trip Report

Slippery Creek Mini-Grid

Initial Visit
July 13 – July 22, 2009

Photo 1. The Slippery Creek mini-grid is a lowland study area supporting primarily black spruce forest with an ericaceous understory on permafrost, interspersed with ponds and wetlands. This photo illustrates the area's characteristic patchwork of shallow ponds, meadows, and tussock spruce stands. It sits on low angle, generally south-facing topography, and is located between true lowland basin areas and the edge of the upland apron of the Alaska Range, which gives this grid some unique properties.

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PURPOSE: The purpose of this trip was to install and measure vegetation and soils attributes of 25 permanent in the Slippery Creek mini-grid accrording to the protocols developed by the Central Alaska Network Vegetation Monitoring Program (see Roland *et al*. 2005). 21 plots were installed and sampled in the span of 8 working plus 2 travel days. Four plots were not sampled due to time limitations primarily because we were camped outside of the mini-grid, which required long travel times to access plots each day.

PERSONNEL: Janet Prevey- vascular collections and crew lead
Duke Brady- non-vascular collections, plot photographs
Ashley Bembenek- soils data and tree coring

ACCESS TO MINI-GRID: The Slippery Creek mini-grid is accessed by helicopter, and is located approximately 20km west/southwest of Kantishna. The Kantishna airstrip was the final staging area for helicopter transport to the mini-grid, however, transport to Kantishna from Park HQ included the Park Road (one red team member, Wendy Mahovlic driving, and most of both teams' gear), one helicopter flight from HQ to Kantishna (three green/red team members and some gear) and one fixed wing flight (with Kantishna Air Taxi, from HQ with two team members and some gear). From Kantishna, it took 10-15 minutes to reach the mini-grid. Access to an ideal campsite near grid center was an issue because of the saturated muskeg that characterized much of the open areas within the grid. Some attempts were made to land in these few open areas (enough tree clearing for an LZ) that seemed promising (fig. 2), but each attempt was met with difficult, "sinking" conditions that prevented the pilot from fully setting down. The unanticipated flight time drained fuel and forced a decision from the crew leader to land at the creek, located ~1km southwest of the southwest perimeter of the grid.

Figure 2. Aerial view of some of the attempted LZs within the Slippery Creek mini-grid.

CAMPSITE LOCATION: Camp was located approximately 1km southwest of the southwest corner of the mini-grid on the sandy gravel bar of Slippery Creek (longitude -151.4968, latitude 63.428)(Fig. 3). This was not an ideal location for camp in terms of accessing the mini-grid, but it did provide us with a water source, decent visibility for wildlife safety, and at times a tiny wind-break from the insatiable mosquitoes. This

Figure 3. View of camp, looking north down Slippery Creek. Camp located on almond shaped bar in center of photo.

point on the creek was determined to be the closest to the perimeter of the grid, and the daily trek from camp to grid was a trudge through muskeg, hummocks and tussocks, with an elevation gain of a few hundred feet. No major animal signs were observed at camp, aside from frequent avian sightings. The creek level and clarity fluctuated fairly drastically as the weather changed from rainy and cold to hot and dry. No dependable repeaters were available for the radio in camp or the grid, but the satellite phone worked well.

WATER AVAILABILITY: We flew in with 6, 5-gallon water jugs, and used ~4 of them during the trip. We had the main creek for washing, which saved us a lot of water, and we had access to the drainage creek, which would have been good for pumping had we needed it. Within the grid, there were a couple main drainage creeks that would have provided plenty of clear water to a campsite within the grid. In fact, after a couple days of rain, these were flowing fast and deep, and could have even been a potential hazard were it not for their relatively narrow width. The most prominent singular drainage flows west from within the grid towards Slippery Creek and cuts between plots 8 and 9, passing very close to plot 4.

HIKING CONDITIONS: The Slippery Creek mini-grid is a lowland black spruce forest comprised of uneven hummocks and tussocks, soggy expanses of muskeg, and veins/patches of fairly dense, ~2-3m high Alder near standing and flowing water. The additional 1km of hiking from camp prevented us from completing the entire grid, and protocol was revised by day four in order to accomplish three plots per day (tree coring was abandoned and soil measurements were limited to two points per plot). To the west of plot 5 there is a drainage that should be avoided because of dense brush, but just south of that is a stony ridge, which provided good open access at the top of the hill between the grid and camp.

WEATHER PATTERNS: The weather on this trip was varied, and perhaps felt more extreme because of the mosquito factor and the extra hiking. We had consistent rain for a couple of days at the beginning of the trip, which was paired with chilly temperatures. The sweating from the extra hiking heightened the chill, and so bringing a set of dry layers is recommended if in a similar situation. Rubber boots became a necessity during these days for walking through standing water, and especially for the wet, low brush and other permeating moisture that had normal gore-tex hiking boots saturated throughout. Little relief was gained as the weather changed to hot and sunny for the remainder of the trip, with a handful of moments offering the dry cloud cover that made hiking and working more pleasant.

PHENOLOGY OBSERVATIONS: Plant phenology during our stay seemed to be in optimal for our work. Many plants were flowering and fruiting, and the two carnivorous plants found in plots were active. We made sure to do one plot that was half on a floating *Carex*/*Sphagnum* mat, and perhaps some of the plots we didn't get to are in

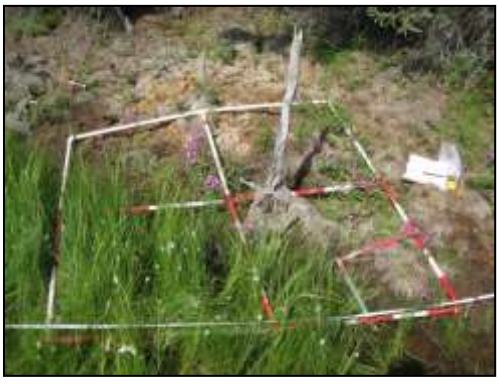

Figure 4. Plot 22 was partly in a muskeg meadow, which offered an interesting composition of floating grasses, sedges, and moss.

similar areas. The ecological uniqueness of this grid comes from its slightly south facing, slightly varied and rolling topography, as well as its location in an "apron" area between the beginnings of the upland area of the Alaska Range and the lowland basin areas beyond.

ANIMAL OBSERVATIONS: No large mammal sightings occurred during our work or at camp, but we did find bear scat and moose droppings between plots. The entire grid was a network of rodent dens and trails, with many holes and tracks occurring within our quadrats. At camp we experienced constant avian visits, including a flock of Bohemian Waxwings, a Belted Kingfisher, flycatchers, chickadees, gray jays, and others. Gray jays were a common site throughout the grid, as they would often perch in trees to gander and squawk at us while we were working. Several large birds of prey were sighted from afar, but were unidentifiable. Wood frogs were sighted twice, once within a plot and once just outside. Poor visibility within the grid, caused by the lack of major variation in topography and at times dense brush, encouraged us to keep bear calls constant and loud. This may have prevented any additional animal sightings. The mosquitoes and black flies were probably as bad as they get here. A head net in addition to a bug shirt is recommended (helpful when eating and better ventilation in stifling moments), as well as gloves and repellent.

Figure 5. Wood frogs made two appearances during our work. This individual was almost in a quadrat at plot 22.

GENERAL NOTES ON PLOT WORK: Aside from a few anomalous species, the ecological makeup of this grid was similar throughout once it was established. There were subtle but interesting botanical variations on the theme where the open muskeg, pond, and floating grass/sedge/moss mats occurred. There were larch trees/saplings peppered within the grid, and many spruce trees and saplings (mostly saplings). The sometimes lengthy sapling tallies, distance from camp, and slow foot travel over the spongy hummocks made for 10+ hour days, even with shortened protocol.

RECORD OF COLLECTIONS:

Name	Collection	Numbers
J. Prevey	Vascular	JP-09-134 to JP-09-152
D. Brady	Photographs	IMG_0661 to IMG_0940
D. Brady	Non-vascular	GDB-09-004 to GDB-09-157
A. Bembenek	Soil	27 samples
A. Bembenek	Tree Cores	11 cores

DAILY ACTIVITIES:

Date	Activity/Points Completed	Time Period	Comments
8/13/06	Transport personnel and gear to mini-grid by helicopter, airplane, and vehicle.	7:00am-6:00pm	Gear transport, camp setup.
8/14/09	Point 16	11am-3:40pm	Plot at edge of muskeg
	Point 17	4:30pm-7:10pm	Plot on small plateau above creek
8/15/09	Point 7	10:15am-1:10pm	Open spruce stand with areas of standing water
	Point 8	2:10pm-5:15pm	Open spruce forest, some small frost boils in plot area
8/16/09	Point 11	10:45am-2:15pm	Closed spruce stand, some alder
	Point 6	3pm-6pm	Dense spruce stand, near wet meadow
8/17/09	Point 22	10:30am-2pm	Half in closed spruce stand, half in muskeg meadow with floating mats
	Point 18	2:45pm-4:45pm	Flat area, some scraggly spruce
	Point 19	5:15pm-7:30pm	Similar to 18, smaller trees, dry-ish
8/18/09	Point 12	10am-12:15pm	Small spruce, dry area
	Point 13	1:30pm-3:20pm	Open spruce stand, edge of creek in willow/alder scrub
	Point 14	4pm-6pm	Open spruce stand, dry-ish area
8/19/09	Point 1	10am-12pm	Small open spruce stand, scattered standing water
	Point 2	1:30pm-4pm	Closed and open spruce, alder patches
	Point 3	4:40pm-6:20pm	Open spruce and alder
8/20/09	Point 20	9:45am-12pm	Closed spruce forest
	Point 15	1pm-2:45pm	Open spruce stand with some alder
	Point 10	3:15pm-5pm	Open spruce and alder, dense understory of dwarf shrubs
8/21/09	Point 4	9:30am-11:20pm	Open spruce and alder in wet, boggy area
	Point 9	11:45am-2:20pm	Dry area, open spruce and alder stand
	Point 5	2:45pm-4:30pm	Open spruce and alder stand, muddy sink, and several frost boils
8/22/09	Transport personnel and gear to Headquarters by helicopter, and vehicle.	8am-4:30pm	Break camp, travel, unpack

FUTURE CONSIDERATIONS: Finding a safe LZ for a campsite within the grid should be possible and would allow the time needed to complete all points. Though we did have benefits from camping on the creek, including stellar views of the mountain, the daily climb to the grid began to weigh physically and mentally toward the end of the work. Whatever bug provisions are available should be brought to this grid, including a bug net shawl or draping sort of thing, for peace in personal times.

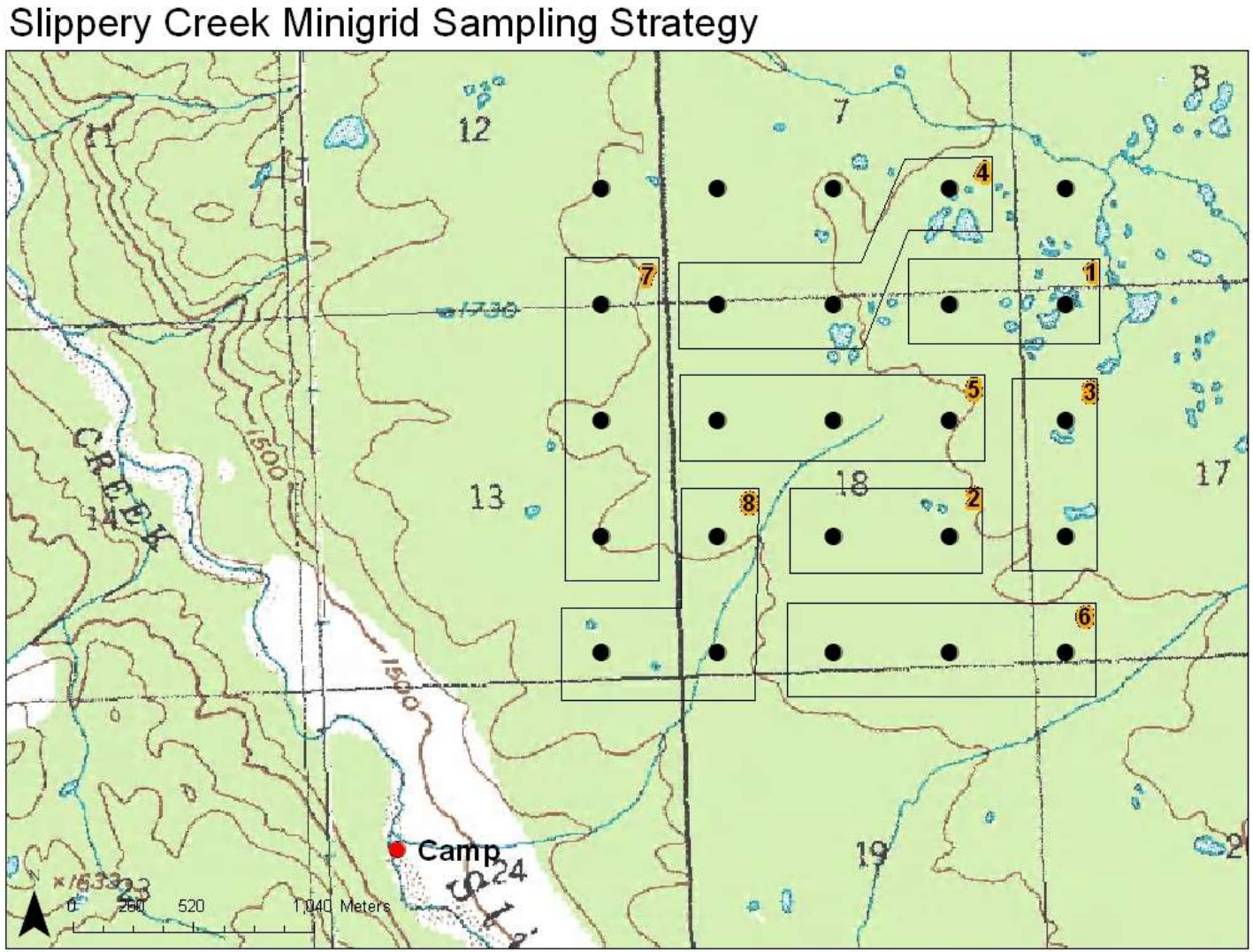

Figure 6.Map showing grid points grouped by sampling day. Day number shown in upper corner of each group.

REFERENCES CITED:

Roland, C.A., Oakley, K., Debevec, E. & Loomis, P. (2005) Monitoring vegetation structure and composition at multiple spatial scales in the Central Alaska Network. National Park Service, Central Alaska Network, Final Monitoring Protocol.